

U.S. Patent Application Serial No. 09/939,716
Amendment filed October 14, 2008
Reply to OA dated July 24, 2008

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-15 (canceled).

1 Claim 16 (currently amended): An optical transmitter comprising:
2 an input terminal for accepting an electrical binary signal,
3 an electrical-optical conversion means for converting an electrical signal to an optical signal,
4 an amplifier for amplifying an input signal applied to said input terminal to level requested
5 for operating said electrical-optical conversion means, and applying the amplified electrical signal
6 to said electrical-optical conversion means,
7 said electrical-optical conversion means having a traveling wave type electrode operating to
8 restrict bandwidth of an output light of said electrical-optical conversion means,
9 wherein
10 said electrical-optical conversion means is a Mach Zehnder light intensity modulator having
11 a traveling wave type electrode,
12 bandwidth of optical output of said Mach Zehnder light intensity modulator is restricted by
13 using mismatching of phase velocity of electric wave propagating on said traveling wave type
14 electrode and optical wave propagating in an optical waveguide having refractive index depending

15 upon electrical field generated by said electric wave,

16 a precoding means is provided at an input stage of said amplifier,

17 said precoding means provides an output which is the same as the previous output when an
18 input binary digital signal is 0, and an output which differs from the previous output when an input
19 digital signal is 1, and

20 said traveling wave type electrode is designed so that phase change of optical wave
21 propagating in said optical waveguide depending upon said electrical field has waveforms of a
22 ternary duobinary signal, according to claim 10;

23 wherein loss in said traveling wave type electrode at $f_0/2$ is always larger smaller than loss
24 at frequency higher than $f_0/2$, where f_0 is clock frequency of said electrical binary signal.

1 Claim 17 (currently amended): An optical transmitter comprising;

2 an input terminal for accepting an electrical binary signal,

3 an electrical-optical conversion means for converting an electrical signal to an optical signal,

4 an amplifier for amplifying an input signal applied to said input terminal to level requested
5 for operating said electrical-optical conversion means, and applying the amplified electrical signal
6 to said electrical-optical conversion means,

7 said electrical-optical conversion means having a traveling wave type electrode operating to
8 restrict bandwidth of an output light of said electrical-optical conversion means,

9 wherein

10 said electrical-optical conversion means is a Mach Zehnder light intensity modulator having
11 a traveling wave type electrode,

12 bandwidth of optical output of said Mach Zehnder light intensity modulator is restricted by
13 using mismatching of phase velocity of electric wave propagating on said traveling wave type
14 electrode and optical wave propagating in an optical waveguide having refractive index depending
15 upon electrical field generated by said electric wave,

16 a precoding means is provided at an input stage of said amplifier,

17 said precoding means provides an output which is the same as the previous output when an
18 input binary digital signal is 0, and an output which differs from the previous output when an input
19 digital signal is 1, and

20 said traveling wave type electrode is designed so that phase change of optical wave
21 propagating in said optical waveguide depending upon said electrical field has waveforms of a
22 ternary duobinary signal, according to claim 10;

23 wherein modulation efficiency of said Mach Zehnder light intensity modulator at $f_0/2$ is
24 always larger than that at frequency higher than $f_0/2$, where f_0 is clock frequency of said electrical
25 binary signal.

Claims 18-23 (canceled).

1 Claim 24: (previously presented): An optical transmitter comprising:
2 an input terminal for accepting an electrical binary signal,
3 an electrical-optical conversion means for converting an electrical signal to an optical signal,
4 an amplifier for amplifying an input signal applied to said input terminal to level requested
5 for operating said electrical-optical conversion means, and applying the amplified electrical signal
6 to said electrical-optical conversion means,
7 said electrical-optical conversion means having a traveling wave type electrode operating to
8 restrict bandwidth of an output light of said electrical-optical conversion means,
9 wherein
10 said electrical-optical conversion means is a Mach Zehnder light intensity modulator having
11 a traveling wave type electrode,
12 bandwidth of optical output of said Mach Zehnder light intensity modulator is restricted
13 because of loss of said traveling wave type electrode,
14 a precoding means is provided at an input stage of said amplifier,
15 said precoding means provides an output which is the same as the previous output when an
16 input binary digital signal is 0, and an output which differs from the previous output when an input
17 digital signal is 1, and
18 said traveling wave type electrode is designed so that phase change of optical wave
19 propagating in said optical waveguide depending upon said electrical field has waveforms of a
20 ternary duobinary signal.

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